REMARKS

Claims 1-20 are currently pending in the above-captioned matter. By this amendment, claims 1, 6 and 10 have been amended, and claim 21 has been added. After entry of this amendment claims 1-21 are pending, claims 1, 6 and 21 being independent. Support for the amendments is found in the specification at page 12, line 29-34; page 14, lines 21-34. Remarks made herein are based on the claims as amended hereby.

Claims 1-20 were rejected under 35 USC §103 as obvious over U.S. Patent No. 5,298,289 to Lindert et al. (the '289 patent) in view of U.S. Patent No. 5,378,291 to Ara et al. (the '291 patent).

The combination of the references cited fails to teach or suggest Applicants' invention which is directed to a protecting a surface such that it will not need to painted after subjecting it to Applicants' process. In contrast, the '289 patent is directed to passivation films used as dried in place pretreatments for subsequent painting. There is no teaching in the '289 patent of how to achieve Applicants invention as currently claimed, nor any motivation to change the '289 patent according to the '291 patent to achieve the invention as currently claimed.

As the Office is aware, in order to support a rejection under 35 U.S.C. §103, the Office must establish that there is some suggestion, either in the reference or in the relevant art, of how to modify what is disclosed to arrive at the claimed invention. In addition, "[s]omething in the prior art as a whole must suggest the desirability, and, thus, the obviousness, of making" the modification to the art suggested by the Examiner. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 U.S.P.Q. 2d (BNA) 1434, 1438 (Fed. Cir.), *cert. denied,* 488 U.S. 825 (1988). That is, although the Office may suggest that the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the *desirability* of such modification. *In re Laskowski* 871 F.2d 115, 117, 10 U.S.P.Q.2d (BNA) 1397, 1398 (Fed. Cir. 1989). There must be a teaching in the prior art for the proposed combination or modification to be proper. *In re Newell*, 891 F.2d

899, 13 U.S.P.Q.2d (BNA) 1248 (Fed. Cir. 1989). If the prior art fails to provide this necessary teaching, suggestion, or incentive supporting the Examiner's suggested modification, the rejection based upon this suggested modification is error and must be reversed. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d (BNA) 1566 (Fed. Cir. 1990).

The '289 patent fails to teach or suggest the unique combination of alpha and beta polymers, plus film forming molecules of claim 1. Likewise, there is no teaching or suggestion of a composition for the process according to claim 6, which requires the mass of film forming molecules to have a selected glass transition temperature.

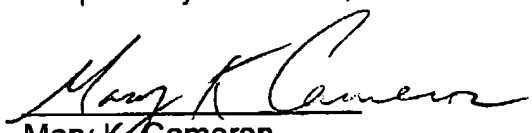
The '291 patent requires coatings containing hexavalent Cr and the '289 patent teaches that chromium may be present. Combining the two references would produce a chromium containing coating which is not the invention of claim 21.

Applicant submits that the claims, as amended, are not obvious over the prior art of record and that the Section 103 rejection should be withdrawn.

CONCLUSION

Applicant requests reconsideration in view of the amendments and remarks contained herein, a copy of the claims showing the amendments made is attached hereto as an appendix. Applicant submits that the claims are in condition for allowance and a notice to that effect is respectfully requested. Should the Examiner have any questions regarding this paper, please contact the undersigned.

Respectfully submitted,



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APPENDIX

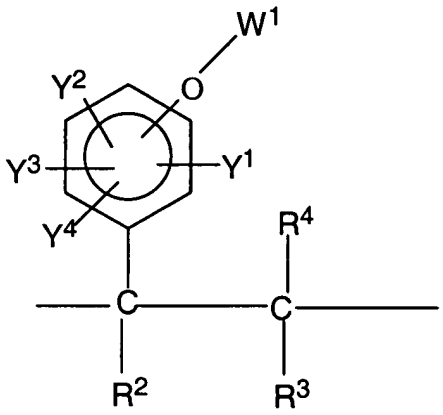
1. (Twice Amended) A process for forming over a metal surface an adherent solid coating that imparts to the metal surface after coating at least one of the following changes: (i) protecting the surface as treated, without any additional coating, from corrosion more effectively than does the absence of any coating; (ii) improving the adhesion of a subsequently applied coating, compared to the adhesion that would be achieved between the same subsequently applied coating and the uncoated metallic surface; and (iii) allowing the treated metallic surface to be satisfactorily cold-worked without the need for any liquid organic lubricant under conditions where the metal surface if not coated can not be satisfactorily cold-worked without use of an organic liquid lubricant, said process comprising operations of: (I) coating said metal surface with a layer of an aqueous liquid composition comprising water and:

(A) a concentration of a component of dissolved phosphorus-containing anions;

(B) a concentration of a dissolved component selected from the group consisting of simple and complex anions containing fluorine atoms;

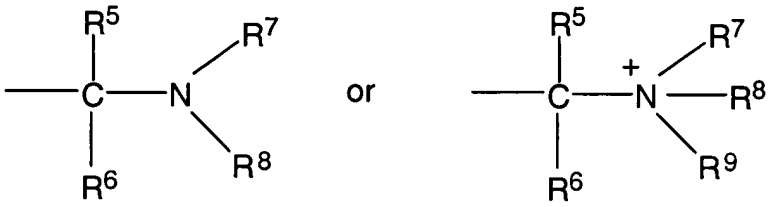
(C) a concentration of a component consisting of dissolved, dispersed, or both dissolved and dispersed materials [(α), (β), or both] (α) and (β), wherein:

(α) consists of polymer molecules each of which has at least one unit conforming to the immediately following general formula (II):



wherein:

- each of R^2 through R^4 is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety with from 1 to 5 carbon atoms, and an aryl moiety with from 6 to 18 carbon atoms;
- each of Y^1 through Y^4 is selected, independently, except as noted further below, of each other and independently from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule from the group consisting of: a hydrogen moiety; a $-CH_2Cl$ moiety; an alkyl moiety with from 1 to 18 carbon atoms; an aryl moiety with from 6 to 18 carbon atoms; a moiety conforming to the general formula $-CR^{12}R^{13}OR^{14}$, where each of R^{12} through R^{14} is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety; and a moiety Z that conforms to one of the two immediately following general formulas:

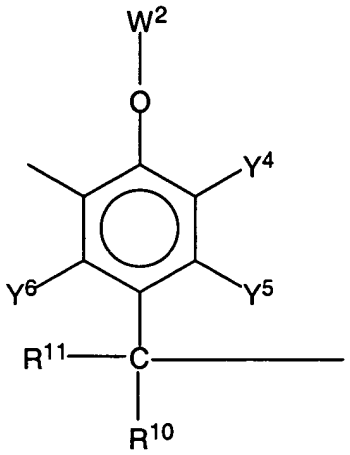


where each of R^5 through R^8 is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety and R^9 is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxy or polyhydroxy alkyl moiety, an amino or polyamino alkyl moiety, a mercapto or polymercapto alkyl moiety, a phospho or polyphospho alkyl moiety, an $-O^-$ moiety, and an –OH moiety,

at least one of Y^1 through Y^4 in at least one unit of each selected polymer molecule being a moiety Z as above defined; and

- W^1 is selected, independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an acyl moiety, an acetyl moiety, a benzoyl moiety; a 3-allyloxy-2-hydroxypropyl moiety; a 3-benzyloxy-2-hydroxypropyl moiety; a 3-butoxy-2-hydroxypropyl moiety; a 3-alkyloxy-2-hydroxypropyl moiety; a 2-hydroxyoctyl moiety; a 2-hydroxyalkyl moiety; a 2-hydroxy-2-phenylethyl moiety; a 2-hydroxy-2-alkylphenylethyl moiety; a benzyl, methyl, ethyl, propyl, unsubstituted alkyl, or unsubstituted allyl, unsubstituted alkylbenzyl moiety; a halo or polyhalo alkyl, or halo or polyhalo alkenyl moiety; a moiety derived from a condensation polymerization product of ethylene oxide, propylene oxide or a mixture thereof by deleting one hydrogen atom therefrom; and a sodium, potassium, lithium, ammonium or substituted ammonium, or phosphonium or substituted phosphonium cation moiety; and

(β) consists of polymer molecules each of which does not include a unit conforming to general formula (II) as given above but does include at least one unit corresponding to the immediately following general formula (III):



wherein:

- each of R^{10} and R^{11} is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety with from 1 to 5 carbon atoms, and an aryl moiety with from 6 to 18 carbon atoms;
- each of Y^4 through Y^6 is selected, independently of each other and independently from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule, except as noted further below, from the group consisting of: a hydrogen moiety; a $-CH_2Cl$ moiety; an alkyl moiety with from 1 to 18 carbon atoms; an aryl moiety with from 6 to 18 carbon atoms; a moiety conforming to the general formula $-CR^{12}R^{13}OR^{14}$, where each of R^{12} through R^{14} is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety; and a moiety Z as defined for material (α) above, at least one of Y^1 through Y^4 in at least one unit of each selected polymer molecule being a moiety Z as above defined; and
- W^2 is selected, independently from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an acyl moiety, an acetyl moiety, a benzoyl moiety; a 3-allyloxy-2-hydroxypropyl moiety; a 3-benzyloxy-2-hydroxypropyl moiety; a 3-butoxy-2-hydroxypropyl moiety; a 3-alkyloxy-2-hydroxypropyl moiety; a 2-hydroxyoctyl moiety; a 2-hydroxyalkyl moiety; a 2-hydroxy-2-phenylethyl moiety; a 2-hydroxy-2-alkylphenylethyl moiety; a benzyl, methyl, ethyl, propyl, unsubstituted alkyl, unsubstituted allyl, or unsubstituted alkylbenzyl moiety; a halo or polyhalo alkyl, or halo or polyhalo alkenyl, moiety; a moiety derived from a condensation polymerization product of ethylene oxide, propylene oxide or a mixture thereof by deleting one hydrogen atom therefrom; and a sodium, potassium, lithium, ammonium or substituted ammonium, or phosphonium or substituted phosphonium cation moiety;

the phrase "polymer molecule" in the above definitions of materials (α) and (β) including any electrically neutral molecule with a molecular weight of at least 300 daltons; and

[(B)](D) a concentration of a component of dissolved, stably dispersed, or both dissolved and stably dispersed film-forming molecules, said molecules not being part of any of immediately previously recited components (A) through (C);

(E) a volume of a stable dispersed solid material, that in isolated form has a coefficient of static friction, measured between two pieces of the solid material itself or between the solid material and cold rolled steel, that is not greater than 0.35, the solid material not being part of any components (A) through (D);

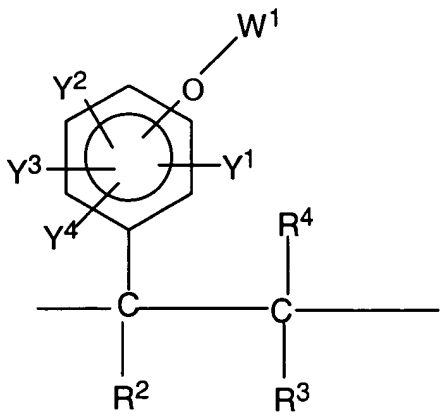
and (II) drying into place over the metal surface the non-volatile contents of the liquid layer formed in operation (I), so as to form said solid coating.

6. (Twice Amended) A process for forming over a metal surface an adherent solid coating that imparts to the metal surface after coating at least one of the following changes: (i) protecting the surface as treated, without any additional coating, from corrosion more effectively than does the absence of any coating; (ii) improving the adhesion of a subsequently applied coating, compared to the adhesion that would be achieved between the same subsequently applied coating and the uncoated metallic surface; and (iii) allowing the treated metallic surface to be satisfactorily cold-worked without the need for any liquid organic lubricant under conditions where the metal surface if not coated can not be satisfactorily cold-worked without use of an organic liquid lubricant, said process comprising operations of: (I) coating said metal surface with a layer of an aqueous liquid composition that has been made by mixing a first mass of water and:

(A) a second mass of a water soluble source of phosphorus-containing anions;

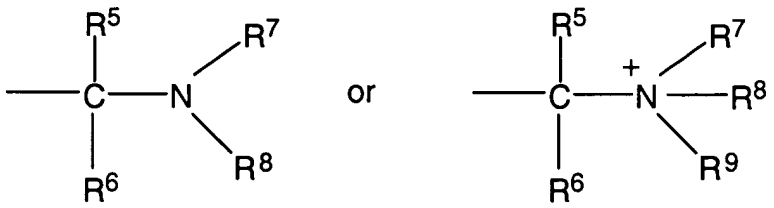
(B) a third mass of a source of water soluble anions selected from the group consisting of simple and complex anions containing fluorine atoms;

(C) a fourth mass of a component consisting of materials (α), (β), or both (α) and (β) wherein: (α) consists of polymer molecules each of which has at least one unit conforming to the immediately following general formula (II):



wherein:

- each of R^2 through R^4 is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety with from 1 to 5 carbon atoms, and an aryl moiety with from 6 to 18 carbon atoms;
- each of Y^1 through Y^4 is selected, independently, except as noted further below, of each other and independently from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule from the group consisting of: a hydrogen moiety; a $-CH_2Cl$ moiety; an alkyl moiety with from 1 to 18 carbon atoms; an aryl moiety with from 6 to 18 carbon atoms; a moiety conforming to the general formula $-CR^{12}R^{13}OR^{14}$, where each of R^{12} through R^{14} is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety; and a moiety Z that conforms to one of the two immediately following general formulas:

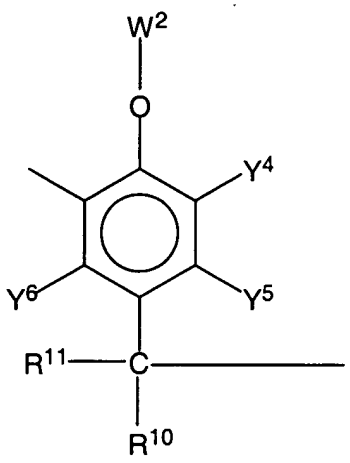


where each of R^5 through R^8 is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety and R^9 is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxy or polyhydroxy alkyl moiety, an amino or polyamino alkyl moiety, a mercapto or polymercapto alkyl moiety, a phospho or polyphospho alkyl moiety, an $-O^-$ moiety, and an -OH moiety,

at least one of Y^1 through Y^4 in at least one unit of each selected polymer molecule being a moiety Z as above defined; and

- W^1 is selected, independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an acyl moiety, an acetyl moiety, a benzoyl moiety; a 3-allyloxy-2-hydroxypropyl moiety; a 3-benzyloxy-2-hydroxypropyl moiety; a 3-butoxy-2-hydroxypropyl moiety; a 3-alkyloxy-2-hydroxypropyl moiety; a 2-hydroxyoctyl moiety; a 2-hydroxyalkyl moiety; a 2-hydroxy-2-phenylethyl moiety; a 2-hydroxy-2-alkylphenylethyl moiety; a benzyl, methyl, ethyl, propyl, unsubstituted alkyl, unsubstituted allyl, or unsubstituted alkylbenzyl moiety; a halo or polyhalo alkyl, or halo or polyhalo alkenyl moiety; a moiety derived from a condensation polymerization product of ethylene oxide, propylene oxide or a mixture thereof by deleting one hydrogen atom therefrom; and a sodium, potassium, lithium, ammonium or substituted ammonium, or phosphonium or substituted phosphonium cation moiety; and

(β) consists of polymer molecules each of which does not include a unit conforming to general formula (II) as given above but does include at least one unit corresponding to the immediately following general formula (III):



wherein:

- each of R^{10} and R^{11} is selected, independently of each other and independently from one molecule of the component to another and from one to another unit conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an alkyl moiety with from 1 to 5 carbon atoms, and an aryl moiety with from 6 to 18 carbon atoms;
- each of Y^4 through Y^6 is selected, independently of each other and independently

from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule, except as noted further below, from the group consisting of: a hydrogen moiety; a $-CH_2Cl$ moiety; an alkyl moiety with from 1 to 18 carbon atoms; an aryl moiety with from 6 to 18 carbon atoms; a moiety conforming to the general formula $-CR^{12}R^{13}OR^{14}$, where each of R^{12} through R^{14} is selected from the group consisting of a hydrogen moiety, an alkyl moiety, an aryl moiety, a hydroxyalkyl moiety, an aminoalkyl moiety, a mercaptoalkyl moiety, and a phosphoalkyl moiety; and a moiety Z as defined for material (α) above, at least one of Y^1 through Y^4 in at least one unit of each selected polymer molecule being a moiety Z as above defined; and

- W^2 is selected, independently from one molecule of the component to another and from one to another unit of any polymer molecule conforming to this formula when there is more than one such unit in a single polymer molecule, from the group consisting of a hydrogen moiety, an acyl moiety, an acetyl moiety, a benzoyl moiety; a 3-allyloxy-2-hydroxypropyl moiety; a 3-benzyloxy-2-hydroxypropyl moiety; a 3-butoxy-2-hydroxypropyl moiety; a 3-alkyloxy-2-hydroxypropyl moiety; a 2-hydroxyoctyl moiety; a 2-hydroxyalkyl moiety; a 2-hydroxy-2-phenylethyl moiety; a 2-hydroxy-2-alkylphenylethyl moiety; a benzyl, methyl, ethyl, propyl, unsubstituted alkyl, unsubstituted allyl, or unsubstituted alkylbenzyl moiety; a halo or polyhalo alkyl, or halo or polyhalo alkenyl, moiety; a moiety derived from a condensation polymerization product of ethylene oxide, propylene oxide or a mixture thereof by deleting one hydrogen atom therefrom; and a sodium, potassium, lithium, ammonium or substituted ammonium, or phosphonium or substituted phosphonium cation moiety; and

(D) a fifth mass of a source of dissolved, stably dispersed, or both dissolved and stably dispersed film-forming molecules, <u>said fifth mass having a glass transition temperature that is not more than 75 °C,</u> said molecules not being part of any of immediately previously recited substances (A) through (C);

(E) a volume of a stable dispersed solid material, that in isolated form has a coefficient of static friction, measured between two pieces of the solid material itself or between the solid material and cold rolled steel, that is not greater than 0.35, the solid material not being part of any components (A) through (D);

and (II) drying into place over the metal surface the non-volatile contents of the liquid layer formed in operation (I), so as to form said solid coating.

10. (Twice Amended) A process according to claim [4]<u>9</u>, wherein:

- the solid layer formed in operation (II) has a mass per unit area of the metal surface coated that is from about 1.5 to about 2.5 g/m^2;
- component (B) is hexafluorotitanic acid, and said third mass contains a number of moles of titanium that has a ratio to the number of moles of phosphorus atoms that is stoichiometrically equivalent to the stoichiometric equivalent as H_3PO_4 of said second mass that is from about 0.21:1.0 to about 0.35:1.0;

- component (C) is selected from polymers of 4-vinyl phenol to which have been grafted Z moieties from reaction of formaldehyde and N-methyl glucamine, and
- said fourth mass has a ratio to the stoichiometric equivalent as H_3PO_4 of said second mass that is from about 0.14:1.0 to about 0.35:1.0;
- said fourth mass has a ratio to the stoichiometric equivalent as H_3PO_4 of said second mass that is from about 1.5:1.0 to about 2.9:1.0; and
- component (E) is high [desnsity] density polyethylene and said sixth mass has a ratio to said fifth mass that is from about 0.042:1.0 to about 0.10:1.0.